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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,354	12/27/2000	Stuart I. Hodge JR.	786-009917-US (PAR)	5467
7590 05/10/2004 GALLAGHER & KENNEDY, P. A. ATTORNEYS AT LAW 2575 EAST CAMELBACK ROAD PHOENIX, AZ 80516-9225			EXAMINER LAXTON, GARY L	
			ART UNIT 2838	PAPER NUMBER

DATE MAILED: 05/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/749,354	Applicant(s) HODGE, STUART I.	
	Examiner Gary L. Laxton	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-11, 13, 14 and 23-27 is/are allowed.
- 6) ☒ Claim(s) 1-8, 15-22, 28 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2-23-04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-8 and 15-22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 7, 15, 28 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Katyl et al (US 5,930,130).

Claims 1 and 7, Katyl et al disclose an active power factor correction circuit (17, 18) (figure 2) having a controller (14) and an inrush current control circuit (27) with a switch (34 of figure 3c) having a control element. Katyl et al illustrates in the drawings, that the control element is connected via line 26 to a supply voltage circuit (26') used for powering the controller (14) and mentions the same in the specification col. 3 lines 45-47; and col. 4 lines 43-45.

However, Katyl et al explicitly disclose that existing signals within the controller (14) are used to control the switch (34); see col. 4 lines 53-55. Therefore, even though Katyl et al do not illustrate in the drawings that existing signals are used to control the inrush current switch (34), thus being coupled to a control output of the controller, that does not dispute the fact that Katyl et al do in

fact disclose that the controller (14) controls the inrush current control circuit. Furthermore, the inrush circuit comprises at least one passive device (30).

Claim 15, Katyl et al disclose passive device (30) of figure 3c; controller (14) coupled in controlling relation to power factor correction circuit (17, 18) and an active current limiting device (34 of figure 3c) connectable in parallel with passive device (30). The examiner takes the same position stated in claim 1 supra regarding Katyl et al disclosing at least two embodiments but only illustrates one embodiment that of the voltage supply circuit 26' being connected to switch (34) even though Katyl et al explicitly state that controller (14) does or could also control the active current limiting device (col. 4 lines 53-55).

Concerning claims 28; it is the examiners position that Katyl et al disclose claim 1 stated supra, and further disclose the active power factor correction circuit has a supply voltage (26') derived from an input voltage (15) to the power supply circuit. Moreover, it also follows that since Katyl et al explicitly disclose that controller (14) uses existing signals therewithin to control switch 34 (col. 4 lines 53-55), the control output of the controller would thus be separate from the supply voltage.

Concerning claim 29; it is the examiners position that Katyl et al disclose claim 15 stated supra, and further disclose the power factor correction control circuit has a supply voltage (26') derived from an input (15) to the current inrush limiting circuit. Moreover, it also follows that since Katyl et al explicitly disclose that controller (14) uses existing signals therewithin to control switch 34 (col. 4 lines 53-55), the controller would thus supply a control output separate from the supply voltage (26') to the active current limiting device in control thereof.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katyl et al (US 5,930,130) in view of Cambier (US 5,107,151).

Katyl et al disclose the claimed invention with regard to claims 1 and 15 supra, except for wherein the inrush current control circuit comprises an IGBT.

Cambier teaches that using an IGBT in place of a MOSFET has several advantages. Namely, an IGBT permits higher current for a particular junction temperature. Furthermore, the IGBT has a higher forward voltage thus permitting a higher current load capacity. The two factors combine to permit the IGBT to overall higher current load capacity.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the circuit of Katyl et al with an IGBT in place of the MOSFET in order to permit higher current load capacity as suggested by Cambier (col. 5 lines 64-67; col. 6 lines 3-8).

6. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katyl et al (US 5,930,130) in view of Sutanto (IEEE).

Katyl et al disclose the claimed invention with regard to claims 1 and 15 supra, except for using a UC3854 controller.

Sutanto teaches that the UC3854 controller is a well known and popular power factor controller that aids novel converters with low current and voltage stresses with simple control loops to achieve near unity power factor.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for Katyl et al to choose a UC3854 controller in order to provide a novel converter with a simple control loop to achieve near unity power factor aided by the controller UC3854 for providing the unity power factor as taught by Sutanto.

7. Claims 4, 5 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katyl et al (US 5,930,130) in view of Goel (US 5,675,276).

Katyl et al disclose the claimed subject matter in regards to claim 1 supra, except for a gate driver circuit and the gate driver circuit comprising a charge pump.

Goel teach the advantages of using a gate driver to drive a MOSFET switch and added advantages of a gate driver circuit using a charge pump (also considered a high voltage driver IC) for rapidly turning the MOSFET on in the power converter circuit.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the circuit of Katyl et al to include a driver circuit and the driver circuit comprising a charge pump for rapidly turning a MOSFET switch on by driving the gate with a rapid responding gate driver circuit as taught by Goel.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katyl et al (US 5,930,130) in view of Esser et al (5,689,394).

Katyl et al disclose the claimed subject matter in regards to claim 1 supra, except for a gate driver circuit and the gate driver circuit comprising an amplifier.

Esser et al teach a gate driver with an amplifier for amplifying a coupled power command signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the circuit of Katyl et al to include a driver circuit and the driver circuit comprising an amplifier for amplifying a power command signal or a driving signal in order to produce a signal properly amplified for driving a switch as taught by Esser et al.

9. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katyl et al (US 5,930,130) in view of Bernstein (US 5,420,780).

Claim 8, Katyl et al disclose the claimed invention with regard to claims 7 and 15, supra except for the at least one passive current limiting device comprises a positive temperature coefficient (PTC) resistor.

Bernstein et al teach the benefits of actively controlling inrush current by shunting current around a passive device and through an active device by utilizing an IGBT to actively control the inrush current.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inrush circuit of Katyl et al to include the passive current limiting PTC apparatus of Bernstein et al for controlling inrush current in the circuit of Katyl et al in order to keep a temperature sensitive thermistor in a cold state in order to maintain high resistance to effectively and efficiently control inrush current as taught by Bernstein et al.

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10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katyl et al (US 5,930,130) in view of Rinehart et al (US 5,900,683).

Claim 22, Katyl et al disclose the claimed invention with regard to claims 19, 18 and 15, supra except for the gate driver circuit comprises a floating power supply.

Rinehart et al teach an isolated gate driver circuit using a floating power supply in order to bias the driver circuit (col. 8 line 22).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the gate driver circuit of Katyl et al to include a floating power supply in order to bias the driver circuit as taught by Rinehart et al.

Allowable Subject Matter

11. Claims 9-11, 13, 14 and 23-27 are allowed.

12. The following is a statement of reasons for the indication of allowable subject matter:

Claims 9-11, 13 and 14; prior art fails to disclose or suggest, inter alia, passively controlling inrush current with a passive device for a predetermined amount of time; generating a power factor control signal; and implementing the power factor control signal to actively control the inrush current, and wherein actively controlling the inrush current shunts output current around the passive device and through an active device.

Claims 23-27; prior art fails to disclose or suggest, inter alia, means for passively controlling inrush current with a passive device for a predetermined amount of time, based upon

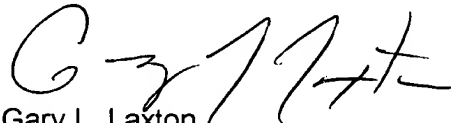
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a determination that an inrush current condition does exist, means for generating a power factor control signal; and means for implementing the power factor control signal to actively control the inrush current, wherein the means for implementing the power factor control signal to actively control the inrush current comprises means for shunting output current around the passive device and through an active device.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L. Laxton whose telephone number is (571) 272-2079. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2084. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Gary L. Laxton
Patent Examiner
Art Unit 2838

GLL